

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

NAN JING LAW OFFICE  
OF INTELLECTUAL PROPERTIES

2F, NO.177 Guangzhou Road  
Nanjing Jiangsu 210024 China

## PCT

WRITTEN OPINION OF THE INTERNATIONAL  
SEARCHING AUTHORITY

(PCT Rule 43 *bis*.1)

Date of mailing

(day/month/year) 13 MAY 2004 (13.05.2004)

Applicant's or agent's file reference

ZSSPCT040001

REPLY DUE

within months/days from  
the above date of mailing

International application No.

PCT/CN2004/000029

International filing date (day/month/year)

09.Jan. 2004 (09.01.04)

Priority date (day/month/year)

07.Jan. 2004 (07.01.04)

International Patent Classification (IPC) or both national classification and IPC

IPC<sup>7</sup> B22C5/00

Applicant

ZHU xudong

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

### 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/  
State Intellectual Property Office of P. R. China  
No. 6 Xitucheng Road, Jimen Bridge, Haidian District  
100088 BEIJING, P.R. CHINA

Facsimile No. 86-10-62019451

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YANG kaining

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International Application No.  
PCT/CN2004/000029

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement:

Novelty (N)

Claims 2-10 Yes  
Claims 1 No

Inventive step (IS)

Claims Yes  
Claims 2-10 No

Industrial applicability (IA)

Claims 1-10 Yes  
Claims No

2. Citations and explanations

1. The following documents are mentioned in this written opinion:

D1: JP55-73442A (see the whole document)

D2: JP11-285779A (see the whole document)

2. The subject matter of Claim 1 does not meet PCT Article 33(2) (novelty) since the document D1 discloses all of the technical features of claim 1.

3. Claims 2 to 10 meet PCT Article 33(2) (novelty) since the document D1 or D2 does not disclose all of the technical features of claims 2 to 10.

4. The subject matters of Claim 1 to 7 do not meet PCT Article 33(3) (inventive step)

Though the document D1 or D2 does not disclose the appended technical feature of dependent claim 2, in order to increase the path and the time of the baked sand in the furnace, thereby obtain the heating of the baked sand thoroughly, the above technical feature is obvious for the skilled person in this art. Accordingly, the claim 2 does not meet PCT Article 33(3).

The appended technical features of the dependent claims 3 to 10 are disclosed by D2 or D1 or the common knowledge of this art respectively, so the claims 3 to 10 are obvious for the person skilled in this art according to D1 and D2/or the common knowledge of this art. So the claims 3 to 10 do not meet PCT Article 33(3).

5. The subject matters of Claim 1-10 meet PCT Article 33(4) (industrial applicability) since the solutions are considered as industrially applicable.

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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/ISA/2004/000029

Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.  
  
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of: international search (under Rules 12.3 and 23.1(b))
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material  
☐ a sequence listing  
☐ table(s) related to the sequence listing
  - b. format of material  
☐ in written format  
☐ in computer readable form
  - c. time of filing/furnishing  
☐ contained in the international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ in addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference ZSSPCT040001	FOR FURTHER see Notification of Transmittal of International Search Report ACTION (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/CN2004/000029	International filing date (day/month/year) 09.Jan. 2004 (09.01.04)	(Earliest) Priority date (day/month/year) 07.Jan. 2004 (07.01.04)
Applicant ZHU xudong		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☐ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. ☐ With regard to any nucleotide and /or amino acid sequence disclosed in the international application, see Box No. I.

2. ☐ Certain claims were found unsearchable (see Box No. II).

3. ☐ Unity of invention is lacking (see Box No. III)

4. With regard to the title,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the abstract,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. with regard to the drawings,

a. The figure of the drawings to be published with the abstract is Figure No. 1

☒ as suggested by the applicant.

☐ as selected by this Authority, because the applicant failed to suggest a figure.

☐ as selected by this Authority, because this figure better characterizes the invention.

b. ☐ none of the figures is to be published with the abstract.

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2004/000029

## A. CLASSIFICATION OF SUBJECT MATTER

IPC<sup>7</sup> B22C5/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC<sup>7</sup> B22C5/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Chinese Invention, Chinese Utility Model

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPI, EPODOC, PAJ, CNPAT

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP, A, 55-73442, (TOYOTA MOTOR CORP) 03.Jun.1980(03.06.80), (see the whole document)	1-2
Y		3-10
Y	JP, A, 11-285779, (OSAKA GAS CO. LTD) 19.Oct.1999(19.10.99), (see the whole document)	3-10
X	JP, A, 2000-61578, (TOKYO GAS CO. LTD) 29.Feb.2000(29.02.00), (see the whole document)	1-2
Y		3-10
A	JP, A, 55-86645, (DAIWA SEISAKUSHO KK) 30.Jun.1980(30.06.80), (see the whole document)	1
A	JP, A, 7-328741, (JIDOSHA IMONO KK) 19.Dec.1995(19.12.95), (see the whole document)	1
A	CN, Y, 2162314, (QIN shengyi) 20.Apr.1994(20.04.94), (see the whole document)	1

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim (S) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 01.Apr. 2004 (01.04.04)	Date of mailing of the international search report 13 · MAY 2004 (13 · 05 · 2004)
Name and mailing address of the ISA/CN No. 6. Xitucheng Rd. Haidian District, Beijing, China (100083)	Authorized officer YANG Kaining
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INTERNATIONAL SEARCH REPORT  
Information on patent family members

International application No.

PCT/CN2004/000029

JP, A, 55-73442	03.Jun. 1980	JP, B, 57042413	08.Sep. 1982
		JP, C, 1150701	14.Jun. 1983
JP, A, 11-285779	19.Oct. 1999	NONE	
JP, A, 2000-61578	29.Feb. 2000	NONE	
JP, A, 55-86645	30.Jun. 1980	NONE	
JP, A, 7-328741	19.Dec. 1995	NONE	
CN, Y, 2162314	20.Apr. 1994	NONE	

## HEATING APPARATUS FOR FOUNDRY SAND

The present invention involves a heating apparatus for the foundry sand. This heating apparatus includes a furnace body, an inlet of sand, a dust and fume extraction port, a furnace cavity, and an outlet of sand. The inlet of sand is provided in the upper portion of the furnace body, a burner port is provided in the lower portion of the furnace body, a heat exchanger is provided in the furnace cavity of the middle of the furnace body. The apparatus can be used for the heating or baking of the new sand and used sand.